

REMARKS

Claims 1-22 are pending in this application, with claims 12-22 standing as withdrawn.

Claims 1, 2, 4, and 7-10 have been amended to define still more clearly what Applicant regards as his invention. Claims 23 and 24 have been canceled without prejudice or disclaimer of subject matter. Of the claims currently under examination, claim 1 is independent.

Claim 23 was rejected under 35 U.S.C. § 112, second paragraph, as being indefinite.

Cancellation of claim 23 renders its rejection moot.

Claims 1-6, 9-11, and 23 were rejected under 35 U.S.C. § 103(a) as being obvious from Belgian Patent No. 891445 in view of EP 1206917 or EP 1251217; and claims 7 and 8, as being obvious from Belgian Patent No. 891445 in view of EP 1206917 or EP 1251217 and further in view of WO 93/15353.

Applicant submits that independent claim 1, together with the claims dependent therefrom, are patentably distinct from the cited references for at least the following reasons.

First, cancellation of claim 23 renders the rejection of that claim moot.

Claim 1 is directed to a roll-formed beam of substantially rectangular cross-section formed from a unitary piece of metal. The beam includes opposed first and second substantially parallel walls formed with at least three adjacent layers of the piece of metal, the at least three layers of the piece of metal being substantially parallel to the first and second substantially parallel walls. The beam also includes opposed third and fourth substantially parallel walls between the first and second walls, one of the third and fourth walls having a seam joining two opposed longitudinal edges of the piece of metal.

Applicant submits that the device disclosed in Belgian Patent No. 891445 is unsuitable

for forming the basis of an obviousness rejection, as the claimed invention relates to a roll formed beam, i.e., formed using a roll former, whereas Belgian Patent No. 891445 contains no such disclosure or even suggestion. The beam in Belgian Patent No. 891445 is disclosed as being produced by folding. Folding is the simultaneous bending of an entire length of a material about a line. This is a very different process to roll forming, which involves a continual bending process at a point moving progressively along a line, and which enables it to be used in the production of relatively long continuous lengths. In contrast, folded products are limited in length to the length of the folding machine itself. Applicant submits that the shape of the device disclosed in Belgian Patent No. 891445 is inherently unsuitable/impossible for production with a roll former. In addition, the Applicant's claims clearly preclude folded beams. (Applicant has attached hereto an English translation of Belgian Patent No. 891445 for the Examiner's reference.)

Secondly, Applicant submits that the positioning of the seam in Belgian Patent No. 891445 is inherently linked to the folding steps used to create the beam shown therein. Put another way, it would not be possible to simply move the seam to another part of the beam without forming the beam by another, completely different set of folding steps. As a result, it is respectfully submitted that it is a gross oversimplification on behalf of the Examiner to suggest that the seam in the beam shown in Belgian Patent No. 891445 could be relocated to conform with the seam location in either EP 1206917 or EP 1251217. This is simply not the case. Applicant also stresses that the positioning of the seam in a roll formed or folded beam cannot simply be arbitrarily chosen (for example, to maximize the structural strength of the beam) as it is inherently driven by the roll forming or folding steps taken to produce the beam as to where the seam will be located.

Thirdly, Belgian Patent No. 891445 contains no disclosure that the beam shown therein is rendered unsuitable for its intended purpose by its seam location. Put another way, there is no suggestion or even hint that the seam could be moved to improve any property of the beam of Belgian Patent No. 891445. As stated above, even if there was a desire to do so, the seam cannot simply be moved, as to do so would require a complete redesign of how the beam is manufactured (i.e., a completely new beam compared to that disclosed in the Belgian Patent No. 891445).

Beams of this type are installed with their strongest regions (i.e., the triple layered walls) at the top and bottom of the beam. In use, this positions the seam in one of the vertical or side walls, which advantageously provides three uninterrupted layers of metal at the top and bottom of the beam section, thereby maximizing its structural strength. The positioning of the seam in one of the vertical or side walls of the beam minimizes any detrimental effect, as the side walls experience much less load than that of the top and bottom walls.

This is in contrast to the beam disclosed in Belgian Patent No. 891445, which has an interrupted, and thus weaker, layer with a welded join along one of the top/bottom edges, which are under the most load when installed. This results in a beam with different strength profiles between the top and bottom of the beam section and thus different strength profiles dependent on how the beam is positioned/installed. In contrast, locating the seam in a wall that is between the triple-layer walls, as claimed, produces a predominantly symmetrical beam section with the primary axis of the beam sections being orthogonal. The beam disclosed in document Belgian Patent No. 891445, is not symmetrical and does not have orthogonal axes. As a result of the non orthogonal axes in Belgian Patent No. 891445, torsional loads would be produced in the beam section even under a vertical loading. The

beam shown in Belgian Patent No. 891445 is thus likely to exhibit some properties more akin to that of a C-section or open section beam, whereas the claimed invention exhibits the properties of a closed formed beam which is a more rigid and stable beam section and exhibits superior torsional stability.

As mentioned above, the installation orientation of the beam claimed in the present application is not critical, as the substantially symmetrical cross-section of the beam makes its strength capacity the same if inverted. However, the beams shown in the prior art document Belgian Patent No. 891445 are not symmetrical and thus have different load capacities depending on the orientation of the beam section. In practice, this means that an incorrectly installed prior art beam may not provide the strength for the installation for which it is designed.

In summary, Belgian Patent No. 891445 has no disclosure of a roll formed beam or even the use of a roll former and no disclosure of how the beam profiles therein are created, apart from a reference to the sheet being folded; as discussed above, folding and roll forming are very distinct manufacturing operations. Applicant submits that the beam shown in Fig. 2 of Belgian Patent No. 891445 could not be produced in a roll former. Respectfully, Applicant also strongly disagrees with the view expressed by the Examiner which appears to be an oversimplification of the present invention. More particularly, although the beam shown in Fig. 2 of Belgian Patent No. 891445 may superficially look similar to beam of the present invention, it is not a roll formed beam as it is manufactured in an entirely different manner.

The claimed roll formed beam also allows the use of a 'lock' seam to close the beam section. Notably, a lock seam can be produced as part of the roll forming process, effectively making beam manufacture a single stage process. This is in contrast to the beam shown in

Belgian Patent No. 891445 which requires an additional (and expensive) welding stage to be performed, necessitating both welding equipment and a skilled operator. Further, the heat associated with welding long joints can introduce curvature into the beam.

Further, by locating the lock seam in the side walls between the three-layered upper and lower walls, the appearance of the beam is substantially uniform and aesthetically pleasing. This is especially so when the lock seam is located at the center of the side walls. A similar-looking indentation to that resulting from the lock seam can also easily be mirrored on the other side wall of the beam. However, the beam shown in Belgian Patent No. 891445 may have an exposed unsightly weld line and/or require expensive refinishing.

In light of the above, Applicant submits that the Belgian Patent No. 891445 is unsuitable for the basis of an obviousness rejection as it does not disclose a roll-formed beam, nor a beam with a seam positioned in one of the walls between the two triple-layered walls, nor any disclosure of how to do so, nor any mention of any desirability for such a construction.

In addition to the above submissions regarding the unsuitability of the Belgian Patent No. 891445 for forming the basis of an obviousness rejection, the Applicant also submits that the amended claims are nonobvious over Belgian Patent No. 891445 in view of EP 1206917, as those documents alone or in combination do not disclose a roll-formed beam with a lock seam positioned in one of the single layer walls which extends between the triple layer walls, as claimed. EP 1206917 also discloses a folded beam, not a roll formed beam as claimed; see, e.g., column 2, line 9 "obtained by bending", line 32 "by bending", line 39 "The two bend lines", and column 3, line 10 "small and simple bending operations". EP 1206917 also does not disclose a lock seam but rather a corner with two overlapping parts which offer significantly less strength than the claimed lock seam. In addition, half of the overlapped

parts in EP 1206917 are positioned in the upper/lower wall of the beam - which are subjected to the highest load. This is in contrast to Applicant's claimed beam which has all of the lock seam in the side wall - which is subjected to the least load.

Applicant also reiterates, respectfully, that it is a gross oversimplification on behalf of the Examiner to suggest that the seam in the beam shown in Belgian Patent No. 891445 could be relocated to conform with the seam location in EP 1206917. This is simply not the case. The Applicant also reiterates that the positioning of the seam in a roll formed or folded beam cannot simply be arbitrarily chosen (for example, to maximize the structural strength of the beam) as it is inherently driven by the roll forming or folding steps taken to produce the beam as to where the seam will be located. The seam cannot simply be moved, as to do so would require a complete redesign of how the beam is manufactured (i.e., a completely new beam compared to that disclosed in the Belgian Patent No. 891445).

In addition to the above submissions regarding the unsuitability of the Belgian Patent No. 891445 for forming the basis of an obviousness rejection, Applicant also submits that the amended claims are nonobvious over Belgian Patent No. 891445, in view of EP 1251217, as those documents alone or in combination also do not disclose a roll-formed beam with a lock seam positioned in one of the single layer walls which extends between the triple layer walls, as claimed. EP 1251217 also discloses a folded beam, not a roll formed beam as claimed, which is produced in a number of folding steps; see, e.g., column 3, line 24 "metal sheet folded". EP 1251217 also discloses the layers of the first and second walls being parallel to the third and fourth walls, not to the first and second walls as defined in the amended claims.

Applicant again reiterates that the seam in the Belgian patent no. 891445 cannot simply be moved to conform with that of EP 1251217, as to do so would require a complete redesign of

how the beam is manufactured (i.e., a completely new beam compared).

For all of the above reasons, it is submitted that it is improper to declare the invention of claim 1 of the present application as obvious on the basis of Belgian Patent No. 891445 combined with either of EP 1206917 or EP 1251217.

The other claims in this application are each dependent from claim 1 discussed above and are therefore believed patentable for the same reasons. Since each dependent claim is also deemed to define an additional aspect of the invention, however, the individual reconsideration of the patentability of each on its own merits is respectfully requested.

In view of the foregoing amendments and remarks, Applicant respectfully requests favorable reconsideration and early passage to issue of the present application.

Respectfully Submitted



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